WHAT IS CLAIMED IS:

1. A method for producing a hardened profiled structural part from a hardenable steel alloy with cathodic corrosion protection, wherein:

a) a coating is applied to a sheet made of a hardenable steel alloy, wherein

b) the coating substantially consists of zinc, and

c) in addition the coating contains one or several elements with affinity to oxygen in a total amount of 0.1 weight-% to 15 weight-% in relation to the total coating, and

d) subsequently the coated sheet steel is roller-profiled in a profiling device, so that the sheet tape is formed into a roller-formed profiled strand, and

e) thereafter the coated sheet steel is brought, at least in parts and with the admission of atmospheric oxygen, to a temperature required for hardening and is heated to a structural change required for hardening, wherein

f) a skin made of an oxide of the element(s) with affinity to oxygen is formed on the surface of the coating, and

g) after sufficient heating the sheet is cooled, wherein the rate of cooling is set in such a way that hardening of the sheet alloy is achieved.

2. The method in accordance with claim 1,

characterized in that the profiled strand, which was profiled in a profiling installation, is welded in a downstream located welding device.

3. The method in accordance with claim 1 and/or 2, characterized in that the profiled strand is cut into profiled strand sections prior to being heated to the temperature required for hardening.

4. The method in accordance with one of the preceding claims, characterized in that, prior to being heated to the temperature required for hardening, the profiled strand or the profiled strand sections are heated in a heating step to a temperature which makes possible the partial formation of iron-zinc phases in the coating, and are maintained at this temperature.

5. The method in accordance with one of the preceding claims, characterized in that, prior to or following profiling and/or prior to or following the cutting to size, and prior to heating to the temperature required for hardening, holes, cutouts, punched-out places and/or a required perforation pattern are provided in the profiled strand or the profiled strands sections.

6. The method in accordance with one of the preceding claims, characterized in that the profiled strand or the profiled strand sections are brought to a temperature of 850°C to 950°C at a heating rate of 50°C to 100°C per second, are maintained at it for at least 5 seconds, and are cooled at a cooling rate of 25°C to 45°C per second.

7. The method in accordance with one of the preceding claims, characterized in that in the course of heating the

profiled strand or the profiled strand sections are maintained at 500°C to 600°C, in particular 530°C to 580°C, for at least 10 seconds, and are subsequently further heated.

8. The method in accordance with one of the preceding claims, characterized in that the profiled strand and/or the profiled strand sections are heated inductively and/or by convection and/or by radiation.

9. The method in accordance with one of the preceding claims, characterized in that cooling is performed in water, wherein a large volume of water is conducted at a very low pressure to the structural component to be hardened.

10. The method in accordance with one of the preceding claims, characterized in that magnesium and/or silicon and/or titanium and/or calcium and/or aluminum and/or manganese and/or boron are used in the mixture as elements with affinity to oxygen.

11. The method in accordance with one of the preceding claims, characterized in that the coating is applied by means of a hot-dip galvanization process, in which a mixture of substantially zinc with the element(s) with affinity to oxygen is used.

12. The method in accordance with one of the preceding claims, characterized in that the coating is applied electrolytically.

13. The method in accordance with claim 12, characterized in that in the course of the electrolytic coating first a zinc layer is deposited, and thereafter the element(s) with affinity to oxygen is (are) deposited on the

applied zinc coating in a second step.

14. The method in accordance with claim 12, characterized in that initially a zinc coating is electrolytically deposited on the surface of the sheet, and subsequently a coating of the elements(s) with affinity to oxygen is (are) applied to the zinc surface.

15. The method in accordance with claim 14, characterized in that the element(s) with affinity to oxygen is (are) applied by vapor deposition or other suitable coating processes.

16. The method in accordance with claim 1 and/or 2, characterized in that 0.2 weight-% to 5 weight-% of the elements with affinity to oxygen are used.

17. The method in accordance with one of the preceding claims, characterized in that 0.26 weight-% to 2.5 weight-% of the elements with affinity to oxygen are used.

18. The method in accordance with one of the preceding claims, characterized in that aluminum is substantially employed as the element with affinity to oxygen.

19. The method in accordance with one of the preceding claims, characterized in that the coating mixture is selected in such a way that in the course of heating the layer forms a surface oxide skin made of oxides of the elements with affinity to oxygen and the coating forms at least two phases, wherein a zinc-rich and an iron-rich phase are formed.

20. The method in accordance with one of the preceding claims, characterized in that the iron-rich phase is embodied

to have a ratio of zinc to iron of at most 0.95 ($Zn/Fe \leq 0.95$), preferably of 0.20 to 0.80 ($Zn/Fe = 0.20$ to 0.80), and the zinc-rich phase a ratio of zinc to iron of at least 2.0 ($Zn/Fe \geq 2.0$), preferably of 2.3 to 19.0 ($Zn/Fe = 2.3$ to 19.0).

21. The method in accordance with one of the preceding claims, characterized in that the iron-rich phase has a ratio of zinc to iron of approximately 30:70, and the zinc-rich face is embodied with a ratio of zinc to iron of approximately 80:20.

22. The method in accordance with one of the preceding claims, characterized in that in addition the layer contains individual areas with zinc proportions > 90% zinc.

23. The method in accordance with one of the preceding claims, characterized in that the coating is formed in such a way that, at a thickness of 15 μm, it develops a cathodic protection effect of at least 4 J/cm^2 after heating.

24. The method in accordance with one of the preceding claims, characterized in that coating with the mixture of zinc and the element(s) with affinity to oxygen takes place during the passage through a liquid metal bath at a temperature of 425°C to 690°C with subsequent cooling of the coated sheet.

25. The method in accordance with one of the preceding claims, characterized in that coating with the mixture of zinc and the element(s) with affinity to oxygen takes place during the passage through a liquid metal bath at a temperature of 440°C to 495°C with subsequent cooling of the coated sheet.

26. The method in accordance with one of the preceding claims, characterized in that the sheet is inductively heated.

27. The method in accordance with one of the preceding claims, characterized in that the sheet is heated in a radiation furnace.

28. The method in accordance with one of the preceding claims, characterized in that the forming and the hardening of the structural component takes place in a roller forming installation, wherein the coated sheet is heated, at least in parts, to the austenizing temperature, is subsequently roller-formed prior to, during and/or after this and, following the roller forming, is cooled at a rate of cooling which causes hardening of the sheet alloy.

29. A corrosion-protection layer for sheet steel, which is subjected to a hardening step, in particular for roller-formed profiled elements wherein, after having been applied to the sheet steel, the corrosion-protection layer is subjected to a heat treatment with the admission of oxygen, wherein the coating substantially consists of zinc, and moreover contains one or several elements with affinity to oxygen in a total amount of 0.1 weight-% to 15 weight-% in relation to the entire coating, wherein the corrosion-protection layer has on its surface an oxide skin of oxides of the one or several elements with affinity to oxygen, and the coating forms at least two phases, wherein a zinc-rich and an iron-rich phase are formed.

30. The corrosion-protection layer in accordance with claim 29, characterized in that the corrosion-protection

layer contains magnesium and/or silicon and/or titanium and/or calcium and/or aluminum and/or boron and/or manganese as elements with affinity to oxygen.

31. The corrosion-protection layer in accordance with claim 29 and/or 30, characterized in that the corrosion-protection layer is a corrosion-protection layer which was applied by means of a hot-dip galvanizing method.

32. The corrosion-protection layer in accordance with one of claims 29 to 31, characterized in that the corrosion-protection layer is a corrosion-protection layer which was applied by means of an electrolytic deposition method.

33. The corrosion-protection layer in accordance with claim 32, characterized in that the corrosion-protection layer is a corrosion-protection layer which was created by electrolytic deposition of substantially zinc and simultaneously one or several elements with affinity to oxygen.

34. The corrosion-protection layer in accordance with claim 32, characterized in that the corrosion-protection layer was initially created by means of electrolytic deposition of substantially zinc and the subsequent vapor deposition, or application by means of other suitable methods, of one or several elements with affinity to oxygen.

35. The corrosion-protection layer in accordance with one of claims 29 to 34, characterized in that the elements with affinity to oxygen are contained in total amounts between 0.1 to 15 weight-%.

36. The corrosion-protection layer in accordance with

one of claims 29 to 35, characterized in that these elements with affinity to oxygen are contained in total amounts of 0.02 to 0.5 weight-% in relation to the entire coating.

37. The corrosion-protection layer in accordance with one of claims 29 to 36, characterized in that the elements with affinity to oxygen are contained in total amounts between 0.6 to 2.5 weight-%.

38. The corrosion-protection layer in accordance with one of claims 29 to 37, characterized in that aluminum is substantially contained as the element with affinity to oxygen.

39. The corrosion-protection layer in accordance with one of claims 29 to 38, characterized in that the iron-rich phase has a ratio of zinc to iron of at most 0.95 ($Zn/Fe \leq 0.95$), preferably of 0.20 to 0.80 ($Zn/Fe = 0.20$ to 0.80), and the zinc-rich phase a ratio of zinc to iron of at least 2.0 ($Zn/Fe \geq 2.0$), preferably of 2.3 to 19.0 ($Zn/Fe = 2.3$ to 19.0).

40. The corrosion-protection layer in accordance with one of claims 29 to 39, characterized in that the iron-rich phase has a ratio of zinc to iron of approximately 30:70, and the zinc-rich face has a ratio of zinc to iron of approximately 80:20.

41. The corrosion-protection layer in accordance with one of claims 29 to 40, characterized in that in addition the layer contains individual areas with zinc proportions > 90% zinc.

42. The corrosion-protection layer in accordance with

one of claims 29 to 41, characterized in that, at a thickness of 15 μm, the coating has a cathodic protection effect of at least 4 J/cm².

43. A hardened profiled structural element made of a hardenable steel alloy, having a cathodic corrosion protection, produced by a method in accordance with one of claims 1 to 28, and a corrosion-protection layer in accordance with one of claims 29 to 42.

44. The hardened profiled structural element in accordance with claim 43, wherein the structural element is formed out of a cold- or hot-rolled steel tape of a thickness of > 0.15 mm and within the concentration range of at least one of the alloy elements within the following limits in weight-%:

Carbon	up to 0.4	preferably 0.15 to 0.3
Silicon	up to 1.9	preferably 0.11 to 1.5
Manganese	up to 3.0	preferably 0.8 to 2.5
Chromium	up to 1.5	preferably 0.1 to 0.9
Molybdenum	up to 0.9	preferably 0.1 to 0.5
Nickel	up to 0.9	
Titanium	up to 0.2	preferably 0.02 to 0.1
Vanadium	up to 0.2	
Tungsten	up to 0.2	
Aluminum	up to 0.2	preferably 0.02 to 0.07
Boron	up to 0.01	preferably 0.0005 to 0.005
Sulfur	0.01 max.	preferably 0.008 max.
Phosphorus	0.025 max	preferably 0.01 max.

the rest iron and impurities.